REMARKS

The present application includes claims 1-34. Claims 1-34 have been rejected by the Examiner. By this response, claims 1, 8, 13 and 28 have been amended.

Claims 1, 8, 13 and 28 have been amended. Claim 1 has been amended to recite that a transponder in a wireless electromagnetic tracking system includes a coil for transmitting a response signal in a wireless electromagnetic tracking system in response to an excitation signal, wherein the tracking system is capable of determining at least one of a position and orientation of the transponder based at least in part on the signal. The transponder additionally includes a rectifying device connected in parallel with said coil to introduce non-linear characteristics into the response signal to allow the tracking system to distinguish the response signal from the excitation signal and to calculate at least one of position and orientation from the non-linear characteristics of the response signal. The Applicant submits the amendments do not introduce new matter and should not require a new search, as they should be subsumed in the Examiner's previous searches. The Applicant also submits that the prior art of record neither teaches nor fairly suggests the limitations of amended independent claim 1 and its dependent claims 2-7. Therefore, claims 1-7 should be allowable.

Claim 8 has been amended to recite that a method for tracking a transponder in a wireless electromagnetic tracking system includes receiving a first signal at a coil in a transponder in a wireless electromagnetic tracking system and rectifying the first signal with a diode connected in parallel with the coil to generate a second signal, wherein the second signal exhibits characteristics distinct from the first signal due to the rectifying of the first signal. The method

also includes transmitting a second signal from the coil and determining at least one of a position and orientation of the transponder based at least in part on the second signal. The Applicant submits the amendments do not introduce new matter and should not require a new search, as they should be subsumed in the Examiner's previous searches. The Applicant also submits that the prior art of record neither teaches nor fairly suggests the limitations of amended independent claim 8 and its dependent claims 10-12. Therefore, claims 8 and 10-12 should be allowable.

Claim 13 has been amended to recite that a transponder in a wireless electromagnetic tracking system consists of a core for transmitting a response signal in a wireless electromagnetic tracking system, wherein the tracking system is capable of determining at least one of a position and orientation of the transponder based at least in part on the response signal. The transponder also consists of a coil wrapped around the core to produce the response signal in response to an excitation signal received at the transponder and a diode connected to the coil to introduce non-linear characteristics into the response signal to distinguish the response signal from the excitation signal and to enable the tracking system to determine at least one of position and orientation of transponder based at least in part on response signal. The Applicant submits the amendments do not introduce new matter and should not require a new search, as they should be subsumed in the Examiner's previous searches. The Applicant also submits that the prior art of record neither teaches nor fairly suggests the limitations of amended independent claim 13 and its dependent claim 14. Therefore, claims 13-14 should be allowable.

Claim 28 has been amended to recite that a transponder in a wireless electromagnetic tracking system includes a coil for transmitting a response signal in the wireless electromagnetic tracking system in response to an excitation signal, wherein the tracking system is capable of determining at least one of a position and orientation of the transponder based at least in part on

the response signal. The transponder includes a switching device connected in parallel with the coil to alter characteristics of the response signal. The Applicant submits the amendments do not introduce new matter and should not require a new search, as they should be subsumed in the Examiner's previous searches. The Applicant also submits that the prior art of record neither teaches nor fairly suggests the limitations of amended independent claim 28 and its dependent claims 29-34. Therefore, claims 28-34 should be allowable.

Claims 13-14 were rejected under 35 U.S.C. 102(b) as being anticipated by Stephen et al., U.S. Pat. No. 4,302,846 (Stephen).

Claims 1-2, 8-9, 15-18, and 28-29 were rejected under 35 U.S.C. 103(a) as being anticipated by Herman et al., U.S. Pat. No. 4,670,740 (Herman) in combination with Stephen.

Claims 1-3, 5, 7-12, 15-29 and 32-34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Augenblick et al., U.S. Pat. No. 3,798,642 (Augenblick) in combination with Carney et al., U.S. Pat. No. 5,446,447 (Carney) and Stephen.

Claims 30-31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Augenblick and Carney and Stephen in further view of Murdoch, U.S. Pat. No. 5,153,583 (Murdoch).

Claims 4, 6, and 31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Augenblick and Carney and Stephen in further view of Walton et al., U.S. Pat. No. 4,918,416 (Walton).

The Applicant first turns to the rejection of claims 13-14 under 35 U.S.C. 102(b) as being anticipated by Stephen. Stephen relates to a presence detection system. (col. 1, lines 4-7, 49-

51). More specifically, Stephen discloses a detection system for "**detecting the presence** in a checking zone of an article" and "for detecting ... the unauthorised removal of articles." (col. 1, lines 4-10) (emphasis added).

The system of Stephen uses a marker tag 18 attached to an article of merchandise. (col. 2, lines 35-36). The marker tag 18 includes a receptor reradiator, which includes a tuned resonant circuit 19 tuned to receive two signals from two transmitters 10, 11, along with a non-linear diode 21 and a tuned reradiator circuit 20. (col. 2, lines 35-40). An aerial 15 of a receiver 16 is also located in or adjacent to a zone 14 within which the marker tag 18 operates that is tuned to receive signals radiated by the tuned reradiator circuit 20. (col. 2, lines 40-43). ***On receipt of signals*** from the tuned reradiator circuit 20, the receiver 16 ***triggers a warning device*** 17, which may be audible visual or both audible and visual. (col. 2, lines 43-45).

Thus, the receiver 16 is simply tuned to receive signals from the tuned reradiator circuit 20 of the marker tag 18 to detect generally whether the marker tag 18 and its associated merchandise have existed the allowed zone 14. Such a task does not require exact determination of position and orientation of a transponder in a wireless electromagnetic tracking system, as recited in claim 13. Rather, the receiver 16 must merely pick up the signals from the marker tag 18 to trigger a warning that the market tag 18 is leaving or has left the detection zone 14. The indicators 102-110 mentioned by the Examiner are the visual indicators or lamps 102-110 which form the visual warning that the tag 18 is leaving the authorized area. (col. 8, lines 45-61). Receipt of the two signals triggers the warnings at the exact moment the tag 18 is in the doorway at the boundary of the zone 14. (col. 9, lines 23-31). The position and orientation of the tag 18 within the zone 14 are not determined, and only the relative position at the boundary of the zone 14 is judged by the warning indicator.

Stephen does not teach or suggest a tracking system as recited in independent claim 13. Rather, Stephen simply detects the presence of an article in a zone rather than tracking a position and an orientation of a transponder. Any approximate position of Stephen does not appear to include the position and orientation as recited in claim 13. Claim 13 recites a tracking system that is capable of determining a position and orientation of a transponder. Claim 13 produces and transmits a response signal in response to a received excitation signal at the transponder. Claim 13 recites a diode connected to the coil to introduce non-linear characteristics into the response signal to distinguish the response signal from the excitation signal and to enable the tracking system to determine the position and/or orientation of the transponder based at least in part on the response signal. These limitations are neither taught nor fairly suggested by Stephen. Thus, the Applicant respectfully submits that independent claim 13 and corresponding dependent claim 14 are not taught or suggested by Stephen. Therefore, the Applicant respectfully submits that claims 13-14 are in condition for allowance.

The Applicant next turns to the rejection of claims 1-2, 8-9, 15-18, and 28-29 under 35 U.S.C. 102(b) as being anticipated by Herman. Herman generally relates to frequency dividers. (col. 1, lines 7-8). More particularly, Herman relates to "an improved frequency divider for use as an electronic tag in a **presence detection system**." (col. 1, lines 8-10) (emphasis added). Herman discloses using a frequency divider "in a presence detection system that uses a tag containing the frequency divider." (col. 2, lines 25-27). A frequency is detected to "detect the presence of the tag in the surveillance zone." (col. 2, lines 29-30).

Herman does not teach or suggest a tracking system as recited in independent claims 1, 8, 15, and 28. Rather, Herman simply detects the presence of a tag rather than tracking

at least one of a position and an orientation of a transponder. Claims 1 and 28 recite that a tracking system is capable of determining at least one of a position and orientation of transponder. Claims 1 and 28 have been amended to recite that the coil transmits a response signal in response to an excitation signal, and the tracking system is capable of determining at least one of a position and orientation of the transponder based at least in part on the signal. Claim 1 recites that the transponder includes a rectifying device connected in parallel with said coil to introduce non-linear characteristics into the response signal to allow the tracking system to distinguish the response signal from the excitation signal and to calculate at least one of position and orientation from the non-linear characteristics of the response signal. Claim 28 recites that a switching device connected in parallel with the coil alters characteristics of the response signal. Claims 8 and 15 also recite that tracking includes determining at least one of a position and orientation of a transponder. Claim 8 has been amended to recite that a first signal is rectified with a diode connected in parallel with a coil to generate a second signal, wherein the second signal exhibits characteristics distinct from the first signal due to the rectifying of the first signal to produce the second signal.

Thus, the Applicant respectfully submits that independent claims 1, 8, 15, and 28 and corresponding dependent claims 2, 9, 16-18, and 29 are not taught or suggested by Herman. Additionally, as described above, Stephen does not teach or fairly suggest a position and orientation tracking system or introducing characteristics into a response signal. Any combination of Herman and Stephen also does not teach or fairly suggest all of the limitations of independent claims 1, 8, 15 and 28 or their dependent claims. Therefore, the Applicant respectfully submits that claims 1-2, 8-9, 15-18, and 28-29 are in condition for allowance.

The Applicant next turns to the rejection of claims 1-3, 5, 7-12, 15-29 and 32-34 under 35 U.S.C. 103(a) as being unpatentable over Augenblick in combination with Carney and Stephen. Augenblick relates to a "recognition system for identifying one or more groups of harmonic generating targets." (col. 1, lines 6-8). More specifically, Augenblick relates to "personnel and object identification systems." (col. 1, lines 8-10). Augenblick discloses a recognition system that "reliably **detects the presence** of a particular harmonic generating target." (col. 4, lines 51-54) (emphasis added).

Carney relates to "RF tagging systems in which the resonant frequencies of resonant circuits on a tag are detected to recover an identification code." (col. 1, lines 7-10). More specifically, Carney relates to "an improved RF tagging system wherein an RF tag includes at least one resonant circuit having selectable capacitive and/or inductive components for being resonant at selected ones of different frequencies in a predetermined time sequence corresponding to a predetermined identification code and an external reader for detecting the selected resonant frequencies and decoding the time sequence of the selected resonant frequencies for recovering the predetermined identification code." (col. 1, lines 10-20). Thus, Carney is a variant of an RFID system and not a position and orientation tracking system.

Neither Augenblick nor Carney, alone or in combination, teach or suggest a tracking system as recited in independent claims 1, 8, 15, 21, 22, and 28. Rather, Augenblick and Carney simply identify the presence of a target having a certain identification code rather than tracking at least one of a position and an orientation of a transponder. The claims of the present application recite that the transponder is used in a wireless electromagnetic tracking system for determining position and orientation of the transponder. Claims 1, 21, and 28 recite a tracking system that is "capable of determining at least one of a position and orientation of [a]

transponder." Claims 8, 15, and 22 recite that tracking includes "determining at least one of a position and orientation of [a] transponder." As discussed above in greater detail, Stephen suffers from similar deficiencies when compared with the presently pending claims, as amended. Thus, the Applicant respectfully submits that independent claims 1, 8, 15, 21, 22, and 28 and corresponding dependent claims 2-3, 5, 7, 9-12, 16-20, 23-29, and 32-34 are not taught or fairly suggested by Augenblick, Carney and Stephen, alone or in combination. Therefore, the Applicant respectfully submits that claims 1-3, 5, 7-12, 15-29 and 32-34 are in condition for allowance.

The Applicant next turns to the rejection of claims 30-31 under 35 U.S.C. 103(a) as being unpatentable over Augenblick, Carney and Stephens in further view of Murdoch. Murdoch relates to "electronic and inductive communication apparatus." (col. 1, lines 5-6). More specifically, Murdoch relates to a passive transponder that relates to "a portable, integrated and relatively cheap apparatus advantageously adapted for interrogation and/or identification of an article with which the transponder is associated." (col. 1, lines 6-15).

As discussed above, Augenblick, Carney and Stephens, taken alone or in combination, do not teach or fairly suggest such a tracking system as recited in independent claim 28, from which claims 30-31 depend. Further, Murdoch also does not teach or suggest a tracking system as recited in independent claim 28. Rather, Murdoch simply allows for the identification of an article associated with a transponder rather than tracking at least one of a position and an orientation of a transponder. Therefore, the Applicant respectfully submits that claims 30-31 are in condition for allowance.

The Applicant next turns to the rejection of claims 4, 6, and 31 under 35 U.S.C. 103(a) as being unpatentable over Augenblick, Carney and Stephens in further view of Walton. Walton relates to an identification system "wherein a plurality of portable card type identifiers can be individually distinguished for authorizing financial transactions, for security purposes and similar individual identification." (col. 1, lines 11-15).

As discussed above, none of Augenblick, Carney or Stephens, alone or in combination, teach or suggest a tracking system as recited in independent claims 1 and 28, from which claims 4, 6, and 31 depend. Further, Walton also does not teach or suggest a tracking system as recited in independent claim 28. Rather, Walton simply allows for a plurality of identifiers to be distinguished rather than tracking at least one of a position and an orientation of a transponder. Therefore, the Applicant respectfully submits that claims 4, 6, and 31 are in condition for allowance.

The Applicant respectfully submits that the pending claims are also patentable over the prior art made of record and not relied upon by the Examiner.

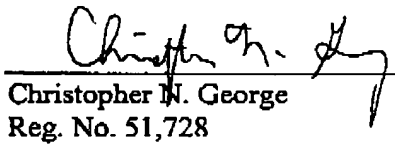
CONCLUSION

It is submitted that the present application is in condition for allowance and a Notice of Allowability is respectfully solicited. If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of GTC, Account No. 07-0845.

Dated: May 15, 2006

Respectfully submitted,



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